

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
LARRY E. HENNEMAN, JR.  
HENNEMAN & ASSOCIATES, PLC  
714 W. MICHIGAN AVE.  
THREE RIVERS, MI 49093

## PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 0057-014P3PCT	Date of mailing (day/month/year) <b>04 SEP 2008</b>
International application No. PCT/US07/04083	International filing date (day/month/year) 16 February 2007 (16.02.2007)
Applicant TECHNOLOGY PROPERTIES LIMITED	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer  Thomas Dunn  Telephone No. 571-272-1700
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(See notes on accompanying sheet)

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 0057-014P3PCT	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below	
International application No. PCT/US07/04083	International filing date ( <i>day/month/year</i> ) 16 February 2007 (16.02.2007)	(Earliest) Priority Date ( <i>day/month/year</i> ) 16 February 2006 (16.02.2006)
Applicant TECHNOLOGY PROPERTIES LIMITED		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the Report**

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 Rule 43.6 *bis(a)*

c. ☐ With regard to any **nucleotide and/or amino acid sequenced** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.  
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.  
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 2

- ☒ as suggested by the applicant.  
☐ as selected by this Authority, because the applicant failed to suggest a figure.  
☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/04083

## A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G06F 15/00**( 2006.01)

USPC: 712/034

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 712/034

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,390,304 (Leach et al) 14 February 1995, see entire document.	1-8, 12-28
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Y		9-11
Y	Hennessy, John L; Patterson, David A; Computer Architecture A Quantitative Approach, Third Edition, 2003, Morgan Kaufmann Publishers, pp 98.	9
Y	US 2004/0003219 A1 (Uehara) 01 January 2004, see entire document.	10
Y	US 5,752,259 (Tran) 12 May 1998, see entire document.	11

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

20 August 2008 (20.08.2008)

Date of mailing of the international search report

04 SEP 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Thomas Dunn

Telephone No. 571-272-1700

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US07/04083

Continuation of B. FIELDS SEARCHED Item 3:  
US-PGPUB;USPAT;USOCR

program,counter,register,address,memory,indirect,processor,coprocessor

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:  
LARRY E. HENNEMAN, JR.  
HENNEMAN & ASSOCIATES, PLC  
714 W. MICHIGAN AVE.  
THREE RIVERS, MI 49093

Date of mailing  
(day/month/year) **04 SEP 2008**

#### FOR FURTHER ACTION

See paragraph 2 below

Applicant's or agent's file reference

0057-014P3PCT

International application No.

PCT/US07/04083

International filing date (day/month/year)

16 February 2007 (16.02.2007)

Priority date (day/month/year)

16 February 2006 (16.02.2006)

International Patent Classification (IPC) or both national classification and IPC

IPC: **G06F 15/00** (2006.01)

USPC: 712/034

Applicant

TECHNOLOGY PROPERTIES LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Date of completion of this opinion

20 August 2008 (20.08.2008)

Authorized officer

Thomas Dunn

Telephone No. 571-272-1700

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US07/04083

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US07/04083

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 9-11 YES

Claims 1-8, 12-28 NO

Inventive step (IS)

Claims NONE YES

Claims 1-28 NO

Industrial applicability (IA)

Claims 1-28 YES

Claims NONE NO

2. Citations and explanations:

Please See Continuation Sheet

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US07/04083

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

**V. 2. Citations and Explanations:**

Claims 9-11, meet the criteria set out in PCT Article 33(2), because the prior art does not teach or fairly suggest the claim limitations.

Claims 1-28, meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

1. Claims 1-8 and 12-28 lack novelty under PCT Article 33(2), as being anticipated by Leach et al. (US Patent No. 5,390,304) herein Leach.

## Claim 1

Leach teaches: **In a group of computer processors (FIG. 1), an improvement comprising: a first processor (FIG. 1, Microcontroller 10 Note: The microcontroller contains controller 14, cpu 12, and memories 16, 18 and 20); and a second processor (FIG. 1, DMA co-processor 22); and wherein said second processor monitors at least one input port while said first processor accomplishes another task (FIG. 1, DMA co-processor 22, Com ports 50-55, Ports 24 and 26; C. 8 L. 19-39).**

## Claim 2

The rejection of claim 1 is incorporated and further Leach teaches: **said first processor is programmed to occasionally check to see if said second processor has initiated a communication there between (C. 33 L. 25-46).**

## Claim 3

The rejection of claim 1 is incorporated and further Leach teaches: **said second processor is programmed to handle input from the input port without interaction with said first processor (C. 7 L. 26-48).**



WRITTEN OPINION OF THE  
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International application No.  
PCT/US07/04083

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

## Claim 4

The rejection of claim 3 is incorporated and further Leach teaches: **said second processor is programmed such that its programming will optionally initiate a communication with said first computer** (C. 7 L. 49-61).

## Claim 5

The rejection of claim 4 is incorporated and further Leach teaches: **said communication is a transfer of instructions from said second processor to said first processor** (C. 7 L. 26-61, FIG. 1 *Note: The inclusion of program bus 34 shows that instructions are stored in memory*).

## Claim 6

The rejection of claim 4 is incorporated and further Leach teaches: **said communication is a transfer of data from said second processor to said first processor** (C. 7 L. 26-61, FIG. 1 *Note: The inclusion of data bus 34 shows that data is stored in memory*).

## Claim 7

The rejection of claim 4 is incorporated and further Leach teaches: **said communication is in the form of data and/or instructions being sent from said second processor to said first processor** (C. 7 L. 26-61, FIG. 1).

## Claim 8

The rejection of claim 1 is incorporated and further Leach teaches: **said input port is an external port for communicating with an external device** (FIG. 1).

### Claims 12 and 28

Claims 12 and 28 contain the same limitations as claim 1 and are rejected for the same reason set forth in connection with the rejection of claim 1.

## Claim 13

Claim 13 contains the same limitation as claim 3 and is rejected for the same reason set forth in connection with the rejection of claim 3.

## Claim 14

The rejection of claim 12 is incorporated and further Leach teaches: **in response to input from the port said first computer runs a routine** (C. 7 L. 26-61).

## Claim 15

The rejection of claim 14 is incorporated and further Leach teaches: **said routine includes interfacing with said second computer** (C. 7 L. 26-61).

### Claim 16

The rejection of claim 15 is incorporated and further Leach teaches: **said routine includes writing to said second computer** (FIG. 10).

## Claims 17 and 18

Claims 17 and 18 contain the same limitations as claims 6 and 5 and are rejected for the same reasons set forth in connection with the rejections of claims 6 and 5.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US07/04083

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

## Claim 19

The rejection of claim 18 is incorporated and further Leach teaches: **said instructions are executed by said second computer sequentially as they are received** (FIG. 7a and 7b, C. 20 L. 25-36).

## Claims 20-27

Leach teaches: **A computer readable medium having code embodied therein for causing an electronic device to perform the steps of Claims 12-19** (FIG. 1, RAM 16, 18 and 20).

1. Claim 9 lack an inventive step under PCT Article 33(3), as being obvious over Leach in view of Hennessy et al ("Computer Architecture: A Quantitative Approach" Third Edition) herein Hennessy.

### Claim 9

The rejection of claim 1 is incorporated and further Leach teaches: at least one of said processors comprises: an instruction register for temporarily storing a group of instructions to be executed; and a program counter for storing an address from which a group of instructions is retrieved into said instruction register; and wherein the address in said program counter can be a memory address (FIG. 7a, C. 18 L. 29 – C. 19 L. 13)

Leach does not specifically teach: the address can be the address of a register. However, Hennessy, in an analogous art, does teach the above limitation (pp 98) as a register indirect addressing mode.

All of the component parts are known in Leach and Hennessy. The only difference is the combination of the old elements into a single device by using register indirect addressing for the program counter. The use of a register indirect addressing mode is not dependent upon a particular architecture and can be applied for use in any system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Hennessy into the teaching of Leach to achieve a predictable result.

2. Claim 10 lack an inventive step under PCT Article 33(3), as being obvious over Leach/Hennessy as applied to claim 9 above, and further in view of Uehara (2004/0003219) herein Uehara.

### Claim 10

The rejection of claim 9 is incorporated and further Leach/Hennessy teaches: said group of instructions is retrieved into said instruction register generally simultaneously (Leach FIG. 7a, C. 18 L. 29 – C. 19 L. 13).

Leach/Hennessy does not specifically teach: said plurality of instructions is repeated a quantity of iterations as indicated by a number on a stack. However, Uehara, in an analogous art, does teach the above limitation (FIG. 1, FIG. 9) for the purpose of loop control.

All of the component parts are known in Leach/Hennessy and Uehara. The only difference is the combination of the old elements into a single device by using the loop control method taught by Uehara. The use of the loop control method is not specific to any one architecture and can be applied to another system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Uehara into the teaching of Leach/Hennessy to achieve a predictable result.

3. Claim 11 lack an inventive step under PCT Article 33(3), as being obvious over Leach as applied to claim 1 above, and further in view of Tran (US Patent No. 5,752,259) herein Tran and in view of Uehara.

### Claim 11

The rejection of claim 1 is incorporated but Leach does not specifically teach: at least one of said processors comprises: a plurality of instructions that are read generally simultaneously. However, Tran, in an analogous art, does teach the above limitation (FIG. 1, C. 3 L. 22-51) in order to speed up instruction availability.

All of the component parts are known in Leach and Tran. The only difference is the combination of the old elements into a single device by fetching multiple instructions simultaneously. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Tran into the teaching of Leach to achieve a predictable result.

Leach/Tran does not specifically teach: said plurality of instructions is repeated a quantity of iterations as indicated by a number on a stack. However, Uehara, in an analogous art, does teach the above limitation (FIG. 1 and 9).

All of the component parts are known in Leach/Tran and Uehara. The only difference is the combination of the old elements into a single device by using the loop control method taught by Uehara. The use of the loop control method is not specific to any one architecture and can be applied to another system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Uehara into the teaching of Leach/Tran to achieve a predictable result.